FCC MAIL SECTION

FEB 24   3 17 PM '94

DISPATCHED BY

Before the
Federal Communications Commission
Washington, D.C. 20554

DA 94-46

In the Matter of                                    )
                                                    )
Petition to Amend Part 68 of the                    )
Commission's Rules to Include                       )
Terminal Equipment Connected to                     )
Basic Rate Access Service Provided                  )
via Integrated Services Digital                     )
Network Access Technology                           )
                                                    )
and                                                 )        CC Docket No. 93-268
                                                    )
In the Matter of                                    )        RM-7815
                                                    )
Petition to Amend Part 68 of the                    )        RM-6147
Commission's Rules to Include                       )
Terminal Equipment Connected to                     )
Public Switched Digital Service                     )
                                                    )
and                                                 )
                                                    )
Correction of Part 68 Typographical                 )
Errors, Clarifications and a Proposal               )
for Part 68 Registration Revocation                 )
Procedures                                          )

## ERRATA, AND ORDER EXTENDING COMMENT PERIOD

Released:   January 12, 1994

1.    The following non-substantive corrections are made to the Notice of
Proposed Rulemaking in CC Docket 93-268, RM-7815, RM-6147 (FCC 93-484) adopted
October 22, 1993 and released November 22, 1993:

Para. 2:  in the seventh line, the dialing and network access channel
for ISDN PRA should read 64 Kbps (instead of 16 Kbps).

Para. 5:   in the fourth line, the word "interface" should read
"interference."

Para. 13(i):  in the first line, the reference to "Section 68.308(i)"
should read "Section 68.310(i)".

Para. 13(n):  the phrase "paragraph (b)(1)(v) of this section" should
read "paragraph (b)(1)(iv) of this section."

In **Appendix A, Figure** 68.3(m) and Tables IV(a) and IV(b) were omitted upon publication.  A corrected Appendix A is reissued herewith.

        2.   The date that comments in this proceeding must be received by the Commission is extended from January 13, 1994 to February 10, 1994, and the date for reply comments is extended from January 28, 1994 to February 25, 1994.

        3.   This errata and extension of time is issued pursuant to authorities contained in 47 U.S.C. §§ 154(i) and 155, and 47 C.F.R. §§ 0.91, 0.201, 0.204 and 0.291.

                                        FEDERAL COMMUNICATIONS COMMISSION


                                        Olga Madruga-Forti
                                        Chief, Domestic Services Branch
                                        Domestic Facilities Division
                                        Common Carrier Bureau

Part 2 and part 68 of Chapter 1 of Title 47 of the Code of Federal Regulations are proposed to be amended as follows:

**PART 2 - FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS**

1. The authority citation for part 2 continues to read as follows:

**Authority:** 47 U.S.C. 154, 202, 203, 204, 205, 208, 215, 218, 313, 314, 404, 410, 602 unless otherwise noted.

2. Section 2.1302 is amended by removing the words "two copies" and adding in their place the words "one copy".

**PART 68 - CONNECTION OF TERMINAL EQUIPMENT TO THE TELEPHONE NETWORK**

1. The authority citation for part 68 is revised to read as follows:

**Authority:** 47 U.S.C. 151, 154, 155, 201-05, 208, 215, 218, 220, 226, 227, 303, 313, 314, 403, 404, 410, 412, 602.

2. Section 68.2 is amended by revising paragraph (a) introductory text, and adding paragraphs (a)(9), (a)(10), (j) and (k) to read as follows:

**§ 68.2 Scope.**

(a) <u>General</u>. Except as provided for in paragraphs (b), (c), (d), (e), (f), (g), (h), (i), (j) and (k), the rules and regulations in this part apply to direct connection:

\*   \*   \*   \*   \*

(9) Of all terminal equipment to Public Switched Digital Service (PSDS Type I, II or III).

(10) Of all terminal equipment to the Integrated Services Digital Network (ISDN) Basic Rate Access (BRA) or Primary Rate Access (PRA).

\*   \*   \*   \*   \*

(j) <u>Grandfathered equipment for connection to PSDS (Type I, II or III)</u>:

(1) Terminal equipment, including its premises wiring directly connected to PSDS (Type I, II or III) on (grandfather eligibility date), may remain for life without registration, unless subsequently modified.

(2) New installation of terminal equipment, including premises wiring, may be installed up to (register only date) without registration  of any terminal equipment involved, provided that the terminal equipment is of a type directly connected to PSDS (Type I, II or III) as of (grandfather eligibility date). This

terminal equipment may remain connected and be reconnected to PSDS (Type I, II or III) for life without registration unless subsequently modified.

(κ) Grandfathered equipment for connection to ISDN BRA or PRA:

(1) Terminal equipment, including its premises wiring directly connected to ISDN BRA or PRA on (grandfather eligibility date), may remain connected to ISDN BRA or PRA for life without registration, unless subsequently modified.

(2) New installation of terminal equipment, including premises wiring, may be installed up to (register only date) without registration of any terminal equipment involved, provided that the terminal equipment is of a type directly connected to ISDN BRA or PRA as of (grandfather eligibility date). This terminal equipment may remain connected and be reconnected to ISDN BRA or PRA for life without registration unless subsequently modified.

.. Section 68.3 is amended by adding the following definitions in alphabetical order as they should appear; by revising the definition of "Test equipment"; by removing in the definition of Zero level decoder the words "See Figure 68.3(j)" and adding in their place "See Figure 68.3(l)"; by revising in Figure 68.3(a) (in the schematic titled "LOOP SIMULATOR CIRCUITS") the maximum voltage value in the table for Condition 1 from "Max 52.5" to read "Max 56.5"; by revising Figure 68.3(g) (the schematic titled "AIOD DATA CHANNEL SIMULATOR CIRCUIT") by removing the second sentence from Note 4 and substituting in its place the following: "4. * * * Thus, if the registered terminal equipment provides -42.5 to -56.5 volts, the overall circuit (simulator and PBX AIOD) shall be tested over the range of -39.5 to -59.5 volts."; and by adding new Figure 68.3(m) (reproduced herein) as it should appear.

§ 68.3 Definitions.

As used in this part:

* * * * *

ISDN Basic Rate Interface: A two-wire, full-duplex echo canceler hybrid interface between the terminal equipment and ISDN BRA. The tip and ring leads shall be treated as telephone connections for the purpose of fulfilling registration conditions.

ISDN Primary Rate Interface: A four-wire point of connection between the terminal equipment and 1.544 Mbps ISDN PRA. The tip, ring, Tip-1, and ring-2 leads shall be treated as telephone connections for the purpose of fulfilling registration conditions.

PSDS Type II Analog Mode Loop Simulator Circuit: A circuit simulating the network side of the two-wire telephone connection that is used for testing terminal equipment to be connected to the PSDS Type II loops. Figure 68.3(m) shows the type of circuit required. Other test circuit configurations may be used provided they operate at the same dc voltage and current characteristics and ac impedance characteristics presented in the illustrated circuit. When utilized, the simulator should be operated over the entire range of loop

resistances, and with the indicated voltage limits and polarities. Whenever the loop current is changed, sufficient time shall be allowed for the current to reach a steady-state condition before continuing testing.

Public Switched Digital Service Type I (PSDS Type I): This service functions only in a digital mode. It employs a transmission rate of 56 Kbps on both the transmit and receive pairs to provide a four-wire full duplex digital channel. Signaling is accomplished using bipolar patterns which include bipolar violations.

Public Switched Digital Service Type II (PSDS Type II): This service functions in two modes, analog and digital. Analog signaling procedures are used to perform supervisory and address signaling over the network. After an end-to-end connection is established, the Switched Circuit Data Service Unit (SCDSU) is switched to the digital mode. The time compression multiplexing (TCM) transmission operates at a digital transmission speed of 144 Kbps to provide full-duplex 56 Kbps on the two-wire access line.

Public Switched Digital Service Type III (PSDS Type III): This service functions only in a digital mode. It uses a time compression multiplexing (TCM) rate of 160 Kbps, over one pair, to provide two full-duplex channels -- an 8 Kbps signaling channel for supervisory and address signaling, and a 64 Kbps user data channel on a two-wire access line.

Switched Circuit Data Service Unit (SCDSU): A CPE device, with PSDS functionality, located between the Network Interface and the data terminal equipment. (It also is sometimes referred to as Network Channel Terminating Equipment.)

*  *  *  *  *

Test Equipment: Equipment connected at the customer's premises that is used on the customer's side of the network interfaces: (a) to measure characteristics of the telephone network; or (b) to detect and isolate a communications fault between a terminal equipment entity and the telephone network. Registration is required for test equipment capable of functioning as portable traffic recorders or equipment capable of transmitting or receiving test tones; except registration is not required for devices used by telephone companies solely for network installation and maintenance activities such as hand-held data terminals, linesmen's handsets, and subscriber line diagnostic devices.

*  *  *  *  *

5
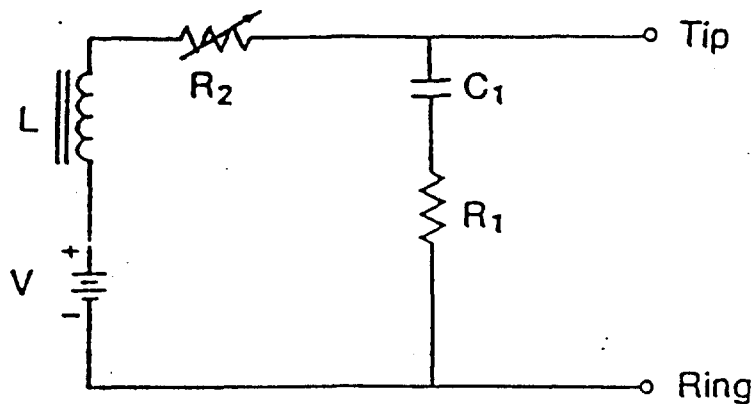
L $\geq$ 10H (Resistance = $R_L$)
$R_1$ = 600 $\Omega$ $\pm$ 1%
$C_1$ = 500$\mu$F, -10%, +50%

TEST CONDITIONS FOR ANALOG MODE

| V (Volts) | | $R_2+R_L$ (Ohms) |
|---|---|---|
| Min | Max | Continuously Variable |
| 36 | 46 | 610 To 1510 |

Fig. 68.3 ( H )     SIMULATOR CIRCUIT FOR PSDS
IN ANALOG MODE

4. In § 68.104(b), the designation "§ 68.308(a)(4)(i) or (ii)" is removed, and the designation "§ 68.308(b)(4)(i) or (ii)" is added in its place.

5. In § 68.112(b)(2), the word "policy" is removed, and the word "police" is added in its place.

6. In the first sentence of the introductory text of § 68.200, the words "two copies" are removed, and the words "one copy" are added in their place; and § 68.200(d) is revised to read as follows:

Subpart C -- Registration Procedures

§ 68.200  Application for equipment registration.

An original and one copy * * *

* * * * *

(d)  A statement that the terminal equipment or protective circuitry complies with and will continue to comply with the rules and regulations in Subpart D of this part, accompanied by such test results, description of test procedures, analyses, evaluations, quality control standards and quality assurance standards as are necessary to demonstrate that such terminal equipment or protective circuitry  complies with and will continue to comply with all the applicable rules and regulations in Subpart D of this part.  The Common Carrier Bureau will publish a Registration Application Guide with a list of acceptable test procedures; but other test methods may be employed provided they are fully described in the application and are found acceptable by the Commission.

* * * * *

7.  In the third line of § 68.208(a), the phrase "of this part of which" is removed, and the phrase "of this part or which" is added in its place.

8.  Section 68.211 is added to read as follows:

§ 68.211 Registration revocation procedures.

(a) Cause for revocation.  The Commission may revoke the registration of a registrant:

(1) Who has obtained the equipment registration by misrepresentation, or

(2) Whose registered equipment is shown to cause harm to the network, or

(3) Who .willfully or repeatedly fails to comply with the terms and conditions of its part 68 registration, or

(4) Who willfully or repeatedly fails to comply with any of the provisions of the Communications Act of 1934, as amended, or of any rule, regulation or order issued by the Commission.

7

(b) <u>Notice of Intent to Revoke Part 68 Registration</u>. Before revoking a part 68 registration under the provisions of this section, the Commission or its designee will issue a written Notice of Intent to Revoke Part 68 Registration, or Joint Notice of Apparent Liability for Forfeiture and Intent to Revoke Part 68 Registration pursuant to §§ 1.80 and 1.89 of the rules.

(1) <u>Contents of the Notice</u>. The Notice will:

(i) Identify the registration number(s) of the equipment, the rule or federal law apparently violated, and the date(s) involved,

(ii) Set forth the nature of the act or omission charged against the registrant, and the facts upon which such charge is based,

(iii) Specify that in the event of revocation, the registrant may not reapply for registration of the same product for a period of six months, and

(iv) Specify that revocation of the registration may be in addition to or in lieu of an amount in forfeiture pursuant to § 1.80 of the rules.

(c)   <u>Delivery</u>. The Notice will be sent via certified mail to the registrant at the address certified in its part 68 application associated with the registration at issue.

(d) <u>Response</u>. The registrant will be afforded a reasonable period of time (usually 30 days from the date of the Notice) to show, in writing, why its part 68 registration should not be revoked or why the forfeiture penalty should not be imposed or should be reduced.

(e) <u>Reapplication</u>. A registrant whose registration has been revoked may not apply for registration of the same product for a period of six months from the date of revocation of the registration.

(f) <u>Reconsideration or appeal</u>. A registrant who is issued a revocation of equipment registration and/or forfeiture assessment may request reconsideration or administrative appeal of the decision pursuant to part 1 of the Commission's rules - Practice and Procedure, 47 C.F.R. part 1.

9. Section 68.300(c) is added to read as follows:

**Subpart D - Conditions for Registration**

*   *   *   *   *

**§ 68.300 Labelling requirements.**

*   *   *   *   *

(c) When the device is so small or for such use that it is not practical to place the labelling information specified in paragraphs (a) and (b), the information required by these paragraphs shall be placed in a prominent place

in user instructions. However, the FCC Registration Number and the device Model Number must be displayed on the device. All lettering on the label must be discernible without magnification.

10. Section 68.308 is amended by revising paragraph (a); adding paragraphs (b)(1)(viii) and (b)(2)(iii); replacing the table labeled "MAXIMUM ALLOWABLE NET AMPLIFICATION BETWEEN PORTS"; adding a table of conditions to paragraph (b)(7)(ii)(C); removing from the table in paragraph (f)(2)(ii) the words "20 kHz" and inserting in their place the words "120 kHz"; revising the first sentence of paragraph (h)(2)(v); and adding paragraphs (h)(3), (h)(3)(i), (h)(3)(ii), (h)(3)(ii)(A), (h)(3)(ii)(B), (h)(4), and Table V to read as follows:

## § 68.308 Signal power limitations.

(a) _General_. Limitation on signal power shall be met at the interface for all 2-wire network ports, tip and ring conductors to PSDS Types II and III, and, where applicable to services, both transmit and receive pairs of all 4-wire network ports. Signal power measurements will be made using terminations as specified in each of the following limitations. The transmit and receive pairs of 4-wire network ports shall be measured with the pair not under test connected to a termination equivalent to that specified for the pair under test. Through-gain limitations apply only in the direction of transmission to the network.

(b) *  *  *

(1) *  *  *

(viii) For PSDS (Types II and III) terminal equipment when in the digital mode of transmission, the maximum equivalent power of any encoded analog signal (other than live voice) shall not exceed -12dBm over any 3-second interval. The equivalent analog power shall be derived by a zero-level decoder located at the network interface to PSDS (Type II or III) facilities.

(2) *  *  *

(iii) For PSDS (Types II and III) terminal equipment, when in the digital mode of transmission, the maximum equivalent power of any encoded analog signal shall not exceed -3dBm when averaged over a 3-second time interval. The equivalent analog signal shall be derived by a zero-level decoder located at the network interface to PSDS (Types II or III) facilities.

*  *  *  *  *

(5) *  *  *

(i) Registered terminal equipment and registered protective ... that will exceed the following:

# MAXIMUM ALLOWABLE NET AMPLIFICATION BETWEEN PORTS (A) (D) (E) (F)

| From (F) \ To | | Tie Trunk Type Ports (C) | | | | | PSOS (I) | OPS Ports (2-Wire) (B) | Public Switched Network Ports (2 Wire) | HCC Digital PBX-CO 4-Wire |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 2 Wire | 4 Wire Lossless | 4 Wire CTS | DDS/HCC Digital PBX-Satellite 4-Wire | DDS/HCC Digital PBX-PBX 4-Wire | | | | |
| Tie Trunk Type Ports (C) | 2-W | 0dB avg 1.5dB max | 0dB avg 1.5dB max | -4dB nom. | 0dB avg 1.5dB max | 3dB avg 4.5dB max | 3dB avg 4.5dB max | -2dB avg -0.5dB max | - | - |
| | 4-W Lossless | 0dB avg 1.5dB max | 0dB avg 1.5dB max | -4dB nom. | 0dB avg 1.5dB max | 3dB avg 4.5dB max | 3dB avg 4.5dB max | -2dB avg -0.5dB max | - | - |
| | 4-W CTS | -4dB nom. | -4dB nom. | -8dB nom. | -4dB nom. | -1dB nom. | -1dB nom. | -6dB nom. | - | - |
| | DDS/HCC Digital PBX-Satellite 4-W | 0dB avg 1.5dB max | 0dB avg 1.5dB max | -4dB nom. | 0dB avg 1.5dB max | 0dB avg 1.5dB max | 0dB avg 1.5dB max | 0dB avg 1.5dB max | - | - |
| | DDS/HCC Digital PBX-PBX 4-Wire | -3dB avg -1.5dB max | -3dB avg -1.5dB max | -7dB nom. | — | 0dB avg 1.5dB max | 0dB avg 1.5dB max | 0dB avg 1.5dB max | - | - |
| PSOS (I) | | -3dB avg -1.5dB max | -3dB avg -1.5dB max | -7dB nom. | 0dB avg 1.5dB max | 0dB avg 1.5dB max | 0dB avg 1.5dB max | 0dB avg 1.5dB max | - | - |
| RTE (B) | | -2dB avg -0.5dB max | -2dB avg -0.5dB max | -6dB nom. | -3dB avg -1.5dB max | -3dB avg -1.5dB max | -3dB avg -1.5dB max | 0dB avg 1.5dB max | 0dB avg 1.5dB max | -3dB avg -1.5dB max |
| OPS 2-W (B) | | -2dB avg -0.5dB max | -2dB avg -0.5dB max | -6dB nom. | 0dB avg 1.5dB max | 0dB avg 1.5dB max | 0dB avg 1.5dB max | 0dB avg 1.5dB max | 0dB avg 1.5dB max | 0dB avg 1.5dB max |
| Public Switch Net 2-W | | - | - | - | - | - | - | 0dB avg 1.5dB max | - | - |
| HCC Digital PBX-CO 4-W | | - | - | - | - | - | - | 0dB avg 1.5dB max | - | - |

* * * * *

(7) * * *

(C) Except for ... for the following conditions (see Fig. 68.3(f)):

```
                         ------------------
                      :    R2 + RL    :
         ------------------------------------------
         CONDITION         CLASS B        CLASS C
         ------------------------------------------
             1               600           1300
             2              1800           2500
         ------------------------------------------
```

* * * * *

(h) * * *

(2) * * *

(v) **Encoded analog content.** If registered terminal equipment connected to 1.544 Mbps digital service or to ISDN PRA service contains an analog-to-digital converter, or generates signals in digital form which are intended for eventual conversion to voiceband analog signals, the encoded analog content of the subrate channels of the ISDN information bearing channels within the 1.544 Mbps signal must be limited. * * *

(3) **Pulse Repetition Rate.** For PSDS (Type II) the pulse repetition rate shall be a maximum of 144,000 pulses per second +/- 5 pulses per second; for PSDS (Type III) the pulse repetition rate shall be a maximum of 160,000 pulses per second +/- 5 pulses per second.

(i) **Template for Maximum Output Pulse.** When applied to a 135 ohm resistor, the instantaneous amplitude of the largest isolated output pulse obtainable from the registered terminal equipment shall fall within the template of Table IV(A) for PSDS Type II or Table IV(B) for PSDS Type III. The limiting pulse template shall be defined by passing an ideal 50% duty cycle rectangular pulse within the amplitude/pulse rate characteristics of Table IV(A) or Table IV(B) through a 1-pole low-pass filter with a 3dB frequency of 260 kHz.

| PULSE CHARACTERISTICS | TABLE IV(A) | TABLE IV(B) |
|---|---|---|
| Pulse Height | 2.6 volts +/-5% | 2.4 volts +/-5% |
| Pulse Width | 3472.2 +/-150ns | 3125 +/-100ns |
| Max Rise or Fall Time | 100ns | 1.2 microsecond |
| (from 10% to 90% points) | | +/- 0.2 microsecond |

(ii) The registered terminal equipment shall be capable of producing zero (0) patterns of scrambled data bursts as follows:

(A) **PSDS Type II Scrambler**. Scrambled data bursts shall be produced by applying exclusive OR logic to the sum of the data and spare bits of the burst and each of eight predefined masks. The scrambling masks are a pseudo-random binary sequence 196 bits in length. The 8 scrambling masks are formed from the sequence of 1568 bits generated by the recursion equation:

$$x(s) = x(n\text{-}2) \oplus x(n\text{-}11)$$

where $\oplus$ represents the OR operation. The initial conditions for the recursion formula are:

$$x(n\text{-}1) = 1 \quad x(n\text{-}5) = 0 \quad x(n\text{-}9) = 1$$
$$x(n\text{-}2) = 0 \quad x(n\text{-}6) = 1 \quad x(n\text{-}10) = 0$$
$$x(n\text{-}3) = 0 \quad x(n\text{-}7) = 1 \quad x(n\text{-}11) = 1$$
$$x(n\text{-}4) = 0 \quad x(n\text{-}8) = 0$$

(B) **PSDS Type III Scrambler**: Scrambled data bursts shall be produced by a scrambler that is frame synchronized with start and stop bits. An exclusive OR with pseudo-random bit pattern is applied to 72 bits. This applies to both the transmitted and the received data. Prior to the data being encoded into bipolar form and being transmitted it is fed into one of the inputs of a two-input exclusive OR gate with the bit pattern fed into the second input coming from the pseudo-random generator. The start and stop bits are not passed through the scrambler or descrambler. The bit pattern the generator creates is given in Table V.

(4) Limitations on terminal equipment connected to ISDN BRA. If registered terminal equipment connecting to ISDN BRA services contains a digital-to-analog converter, or generates signals directly in digital form, which are intended for eventual conversion to voiceband analog signals, the encoded analog content of the digital signal must be limited. The maximum equivalent power of the encoded analog signals, other than live voice, as derived by a zero-level decoder test configuration, shall not exceed -12dBm when averaged over a 3-second interval. The maximum equivalent power of encoded analog signals, as derived by a zero-level decoder test configuration, for network control signaling, shall not exceed -3dBm when averaged over any three-second interval.

12

Table V
PSDS Type III Scrambler Bit Pattern

| Bit Count | Value | Bit Count | Value | Bit Count | Value | Bit Count | Value |
|---|---|---|---|---|---|---|---|
| 0 | 1 | 19 | 1 | 37 | 0 | 56 | 0 |
| 1 | 0 | 20 | 1 | 38 | 0 | 57 | 1 |
| 2 | 1 | 21 | 0 | 39 | 1 | 58 | 0 |
| 3 | 1 | 22 | 1 | 40 | 1 | 59 | 1 |
| 4 | 0 | 23 | 1 | 41 | 0 | 60 | 1 |
| 5 | 1 | 24 | 0 | 42 | 1 | 61 | 0 |
| 6 | 1 | 25 | 1 | 43 | 1 | 62 | 0 |
| 7 | 0 | 26 | 0 | 44 | 1 | 63 | 1 |
| 8 | 0 | 27 | 0 | 45 | 0 | 64 | 1 |
| 9 | 0 | 28 | 1 | 46 | 1 | 65 | 1 |
| 10 | 1 | 29 | 1 | 47 | 0 | 66 | 0 |
| 11 | 0 | 30 | 1 | 48 | 0 | 67 | 0 |
| 12 | 1 | 31 | 1 | 49 | 0 | 68 | 1 |
| 13 | 0 | 32 | 0 | 50 | 1 | 69 | 1 |
| 14 | 0 | 33 | 0 | 51 | 0 | 70 | 0 |
| 15 | 0 | 34 | 0 | 52 | 0 | 71 | 0 |
| 16 | 0 | 35 | 0 | 53 | 0 | | |
| 17 | 0 | 36 | 1 | 54 | 1 | | |
| 18 | 1 | 37 | 1 | 55 | 1 | | |

11. Section 68.310 is amended by revising the table in paragraph (a), revising the introductory text of paragraph (i), and revising the last sentence of paragraph (l) to read as follows:

| Paragraph | Equipment State | Minimum Balance Requirement, dB | Frequency Range, Hz |
|---|---|---|---|
| (b) | On-hook | 60 | 200 - 1000 |
| | On-hook | 40 | 1000 - 4000 |
| | Off-hook | 40 | 200 - 4000 |
| (c) | On-hook | 60 | 200 - 1000 |
| | On-hook | 40 | 1000 - 4000 |
| | Off-hook | 40 | 200 - 4000 |
| (d) | Off-hook | 40 | 200 - 4000 |
| (e) Voice Equipment | On-hook | 60 | 200 - 1000 |
| | On-hook | 40 | 1000 - 4000 |
| | Off-hook | 40 | 200 - 4000 |
| (e) Data Equipment | On-hook | 60 | 200 - 1000 |
| | On-hook | 40 | 1000 - 4000 |
| | Off-hook | 40 | 200 - 4000 |
| (f) | Off-hook | 40 | 200 - 4000 |
| (g) | On-hook | 60 | 200 - 1000 |
| | On-hook | 40 | 1000 - 4000 |
| | Off-hook | 40 | 200 - 4000 |
| (h) | Off-hook | 40 | 200 - 1000 |
| (i) | On-hook | 60 | 200 - 1000 |
| | On-hook | 40 | 1000 - 4000 |
| | Off-hook | 40 | 200 - 4000 |
| (j) | Off-hook | 40 | 200 - 4000 |

(i) **Registered terminal equipment and registered protective circuitry for 4-wire network ports.** The pair under ... impedance. The pair not under test shall be terminated in a metallic impedance of 600-ohms.

\* \* \* \* \*

(l) The maximum ... 1.544 Mbps shall be 100 Ohms plus or minus one percent. The metallic termination used for the longitudinal balance measurements for subrate, ISDN (BRA) and PSDS shall be 135 ohms +/- 1% and for 1.544 Mbps and ISDN 'PRA) shall be 100 ohms +/- 1%. The longitudinal termination for these measurements shall be 90 ohms in all cases

* * * * *

12.   Section 68.312 is amended by revising the introductory sentence of paragraph (b); revising paragraph (b)(2); removing from paragraph (c)(2) the words "paragraph (a)(2)" and adding in their place the words "paragraph (b)(2)"; and by amending the second sentence of paragraph (h) to read as follows:

§ 68.312   On-hook impedance limitations.

(a) *   *   *

(b) Limitations on individual equipment intended for operation on loop-start telephone facilities, including PSDS Type II in the analog mode:

*   *   *   *   *

(2) Registered terminal equipment and registered protective circuitry intended for use on facilities which will always have ringing detection circuitry in use at the same time such registered terminal equipment and registered protective circuitry  is connected need not comply with the 40 kilohm maximum impedance specification of paragraph (b)(1)(iv) of this section.

*   *   *   *   *

(h)   Limitations ... (DID).

PBX ringing supplies whose output appears on the off-premises interface leads shall not trip when connected to the following tip-to-ring impedance which terminates the off-premises station loop:...

*   *   *   *

13.   Section 68.314 is amended by revising the first sentence of the introductory text of paragraph (a); adding paragraph (a)(3); revising the first sentence of the introductory text of paragraphs (b) and (c); adding paragraph (c)(3); revising paragraph (d)(2); adding paragraph (d)(3); and revising the first sentence of the introductory text of paragraph (f) to read as follows:

§ 68.314   Billing protection.

(a)  Call duration requirements on data equipment connected to the public switched network or to tie trunks, or to private lines that access the public switched network, or the PSDS Types I, II or III. *   *   *

*   *   *   *   *

(a)(3) Equipment connected to the PSDS (Types I, II and III). When an incoming PSDS call is answered, both transmission and reception of data shall be prevented for at least 2 seconds after the answering terminal transfers to the off-hook condition.  Fixed sequences of signals transmitted and/or received as specified in § 68.314(a)(2) (i through iv) are excluded. These requirements do

15

not apply to equipment that uses manually activated circuitry to request the switch from analog to digital mode (for PSDS Type II equipment).

(b) Voice and data equipment on-hook signal requirements for equipment connected to the public switched network, or to tie trunks, or to private lines that access the public switched network, or PSDS (Types I, II or III). * * *

* * * * *

(c) Voice and data equipment loop current requirements for equipment connected to the public switched network or to PSDS Type II. * * *

* * * * *

(3) Terminal equipment connected to PSDS Type II shall comply with the requirements of (1) and (2) above, when it enters the analog mode in response to ringing (called party condition), except that the time restriction shall be at least two seconds (instead of five seconds).

(d) * * *

(2) Registered terminal equipment for connection to subrate, 1.544 Mbps, ISDN (BRA or PRA) digital services shall not deliver digital signals to the telephone network with encoded analog content energy in the 2450 to 2750 Hertz band unless an equal amount of encoded analog energy is present in the 800 to 2450 Hertz band.

(3) Terminal equipment connected to PSDS (Types I, II or III) shall not deliver digital signals to the telephone network with encoded analog energy in the 2450 to 2750 Hertz band unless an equal amount of encoded analog energy is present in the 800 to 2450 Hertz band.

* * * * *

(f) On-hook signal requirements for registered terminal equipment for connection to ISDN (BRA or PRA), subrate or 1.544 Mbps digital services.

* * *

* * * * *